What is claimed is:

1. A high speed tool steel comprising, by mass percentage, a basic composition of: a 0.4-0.9 % of C; an equal to or less than 1.0 % of Si; an equal to or less than 1.0 % of Mn; a 4-6 % of Cr; a 1.5-6 % in total of either or both of W and Mo in the form of (1/2 W + Mo) wherein the amount of W is not more than 3 %; and, a 0.5-3 % in total of either or both of V and Nb in the form of (V + Nb), wherein an average grain size of precipitated carbides dispersed in the matrix of the steel is equal to or less than 0.5 μm and a dispersion density of the carbides is equal to or more than 80×10^3 particles/mm^2.

2. The high speed tool steel as set forth in claim 1, wherein an Ni content is equal to or less than 1 % by mass percentage.

3. The high speed tool steel as set forth in claim 1, wherein a Co content is equal to or less than 5 % by mass percentage.

4. The high speed tool steel as set forth in claim 1, wherein an Ni content is equal to or less than 1 % by mass percentage, and a Co content is equal to or less than 5 % by mass percentage.

5. A method for manufacturing a high speed tool steel comprising, by mass percentage, a basic composition of: a 0.4-0.9 % of C; an equal to or less than 1.0 % of Si; an equal to or less than 1.0 % of Mn; a 4-6 % of Cr; a 1.5-6 % in total of either or both of W and Mo in the form of (1/2 W + Mo) wherein the amount of W is not more than 3 %; and, a 0.5-3 % in total of either or both of V and Nb in the form of (V + Nb), wherein an ingot of the steel is prepared

by a remelting process, heated to a temperature of from 1200 ℃ to 1300 ℃, subjected to a soaking process, and then cooled down to a temperature of equal to or less than 900 ℃ at a cooling rate of equal to or more than 3 ℃/minute in surface temperature of the ingot.

6. The method for manufacturing the high speed tool steel, as set forth in claim 5, wherein, after completion of the soaking and the cooling process of the ingot, the ingot is subjected to a hot working process, and then subjected to a quenching and a tempering process.

7. The method for manufacturing the high speed tool steel, as set forth in claim 5, wherein, after completion of the soaking and the cooling process of the ingot, the ingot is subjected to a hot working process, and then subjected to a machining process, followed by a quenching and a tempering process.

8. The method for manufacturing the high speed tool steel, as set forth in claim 5, wherein an Ni content is equal to or less than 1 % by mass percentage.

9. The method for manufacturing the high speed tool steel, as set forth in claim 5, wherein a Co content is equal to or less than 5 % by mass percentage.

10. The method for manufacturing the high speed tool steel, as set forth in claim 5, wherein an Ni content is equal to or less than 1 % by mass percentage, and a Co content is equal to or less than 5 % by mass percentage.